CLAIMS

What is claimed is:

1. A method for generating single polarization output from a fiber laser comprising the steps of using a non-destructive technique to fabricate a Bragg grating within the fiber laser and forming the fiber laser at the grating position into a tight curve.

2. A method for generating single polarization output from a fiber laser as set forth in claim **1**, wherein the fiber laser has a surface and the non-destructive technique for fabricating the grating comprises the steps of positioning a phase mask parallel to a length of the surface of the fiber laser and irradiating the phase mask and fiber laser with electromagnetic radiation.

3. A method for generating single polarization output from a fiber laser as set forth in claim **2**, wherein the phase mask and fiber laser are irradiated with 334 nm electromagnetic radiation from a continuous wave argon laser.

4. A method for generating single polarization output from a fiber laser as set forth in claim **3**, wherein the electromagnetic radiation from the argon laser is conditioned by at least one lens prior to irradiating the mask and fiber laser.

5. A method for generating single polarization output from a fiber laser as set forth in claim **2**, wherein a glass slide is placed between the surface of the fiber laser

and the phase mask during fabrication of the grating to protect the phase mask from debris from the surface of the fiber laser.

6. A method for generating single polarization output from a fiber laser as set forth in claim **1**, wherein the tight curve formed at the grating position is a complete loop in the fiber laser.

7. A method for generating a single polarization output from a fiber laser as set forth in claim **1**, wherein the fiber laser is a neodymium (Nd) doped fiber.

8. A method for generating single polarization output from a fiber laser as set forth in claim **1**, wherein the irradiating step utilizes electromagnetic radiation between 320 nm and 340 nm.

9. An apparatus for generating single polarization output from a fiber laser comprising a Bragg grating fabricated within the fiber laser using a non-destructive technique and further comprising a tight curve formed in the fiber laser at the grating position.

10. An apparatus for generating single polarization output from a fiber laser as set forth in claim **9**, wherein said fiber laser has a surface and said Bragg grating is fabricated by positioning a phase mask parallel to a length of the surface of the

fiber laser and irradiating the phase mask and fiber laser with electromagnetic radiation.

11. An apparatus for generating single polarization output from a fiber laser as set forth in claim **10**, wherein the grating is fabricated by irradiating the mask and fiber laser with 334 nm electromagnetic radiation from a continuous wave argon laser.

12. An apparatus for generating single polarization output from a fiber laser as set forth in claim **11**, wherein the 334 nm electromagnetic radiation is conditioned by at least one lens prior to irradiating the mask and fiber laser.

13. An apparatus for generating single polarization output from a fiber laser as set forth in claim **10**, wherein a glass slide is placed between the surface of the fiber laser and the phase mask during fabrication of the grating to protect the phase mask from debris from the surface of the fiber laser.

14. An apparatus for generating single polarization output from a fiber laser as set forth in claim **9**, wherein the tight curve formed at the grating position is a complete loop in the fiber laser.

15. An apparatus for generating single polarization output from a fiber laser as set forth in claim **9**, wherein the fiber laser is a neodymium (Nd) doped fiber.

16. An apparatus for generating single polarization output from a fiber laser as set forth in claim **9**, wherein the fiber laser operates with electromagnetic radiation between 320 nm and 340 nm.